

# Study Guide for Environmental Baseline

## Objectives of this Module

1. Discuss the regulatory requirements of environmental baseline
2. Identify strategies for developing environmental baselines
3. Work through examples for constructing environmental baselines for continuing actions
4. Discuss information standards for the administrative record

## Introduction

Environmental baseline is a pivotal concept in section 7 consultations as it provides the foundation upon which to build the effects analysis. The regulations define effects of the action as “the direct and indirect effects of an action on the species or critical habitat, together with the effects of other activities that are interrelated or interdependent with that action, *that will be added to the environmental baseline*” (50 CFR 402.02; emphasis added). In other words, our environmental baseline analyses are used to judge the effects of the action against.

As we have explained in previous modules, the status of the species analysis provides the rangewide (or listed entity) perspective while the environmental baseline and effects analyses focus only on those individuals of the species or parcels of critical habitat within the action area. In general, the analyses for the status and environmental baseline are retrospective in that they describe what has happened to the base conditions of the listed resources up to the point of the consultation. The effects analysis is prospective in that it predicts what will happen to these base conditions in the future. As will be explained and illustrated later, the environmental baseline analysis is also prospective. In simplest terms, environmental baseline is the status of listed species or critical habitat within the action area given the response of these listed resources to past and present factors. Although we identify only those factors that have or are occurring, the effects (i.e., response of the listed resources) from these factors (=stressors) does not necessarily end at the present time (e.g., future (persistent) effects from a highway constructed in the past; future (latent) effects from past over-harvesting of gravid females, etc.). Understanding the retrospective and prospective aspects of environmental baseline is critical to our effects analyses.

Environmental baseline analyses are also fundamental to our jeopardy and destruction and adverse modification (JAM) determinations. In making our JAM findings, we first assess the effects of the proposed action on the listed resources within the action area, and then analyze how those effects at the action area scale influence the survival and recovery of the species or the overall value of designated critical habitat. That is, the environmental baseline provides the critical link between how the effects to the individuals or critical habitat within the action area relate to the rangewide survival and recovery of the listed species or overall conservation value of designated critical habitat. Therefore, our environmental baseline analyses need to also explain the importance of the individuals or critical habitat within action area to the survival and recovery of the species or overall value of designated critical habitat.

## Challenges Associated with Environmental Baselines

For more than a decade, our environmental baselines emphasized the various activities that occurred in action areas rather than the impact those activities had on the base condition of listed resources. The Defenders of Wildlife (v USFWS, 2000) lawsuit highlighted this tendency and reminded the Services of the original purpose of environmental baselines--to analyze the impact actions have on the listed resources.

The courts are also reminding us that we are required to continuously monitor prior incidental take exemptions (those provided through incidental take statements and incidental take permits), as well as “take” associated with scientific research and enhancement permits, and to analyze the effect of the aggregate of this take on threatened and endangered species and their critical habitats.

Finally, we are increasingly consulting on a wide variety of continuing actions — including federally-licensed hydroelectric dams; fisheries that have been implemented for years or decades; water diversion or distribution projects; Federal approval of water quality standards, water quality criteria, and pesticides; and older Federal programs — that had never undergone consultation or require new consultations for one or more reasons. These continuing actions present a suite of unique challenges to the more traditional consultation processes. This module will provide strategies for meeting these challenges.

The contents of this module will build on the assessment framework that introduces the Advanced Section 7 Training Course, the Diagnosing Species’ and Critical Habitat module, and will provide the foundation for the Effects of the Action discussion that follows this module.

## 1. The Regulatory Requirements of Environmental Baselines

### *What is Environmental Baseline?*

The regulations (50 CFR 402.02) identify three factors that the Services must, at a minimum, consider in establishing the environmental baseline:

- **past and present impacts** of all Federal, State, or private actions and other human activities in the action area – this includes the past and present effects of all human related activities. For example, the past and present impacts resulting from an ongoing timber harvest.
- **anticipated impacts** of all proposed Federal projects in the action area that have already undergone formal or early section 7 consultation – this includes future impacts from Federal actions already consulted on within the action area. For example, the impacts expected to result from a timber harvest action, which has completed section 7 consultation, but not yet begun to impact the species/critical. This is equivalent to accounting for an outstanding check when balancing your checkbook.

This analysis must also assume that any RPAs or RPMs will be implemented unless there are reasons to believe otherwise. If concurrent consultations are ongoing, it is necessary to consider the anticipated impacts of one of the consultations in the other.

- **impact** of State or private actions which are contemporaneous with the consultation in progress – this includes future impacts from non-Federal actions that are occurring while the consultation is in progress. For example, the impacts expected to result from an ongoing State timber harvest.

The Section 7 Consultation Handbook expands this list of factors to include “the effects of past and ongoing natural factors leading to the current status of the species, habitat, and ecosystem within the action area.”

Considerable confusion persists regarding the type of effects that should be analyzed within the environmental baseline. Of particular concern is whether future effects associated with past, present, or continuing actions should be included in our environmental baseline analyses. Some have interpreted the regulations to restrict environmental baseline to only 2 types of future effects: those arising from Federal actions already consulted on and those from contemporaneous non-Federal actions. Although the regulations expressly exclude future effects from Federal actions not yet consulted on and implicitly exclude future effects from non-Federal actions that have yet to begun (these are covered in our Cumulative Effects analyses), the regulations do not limit our analyses to just these three types of impacts. The section 7 handbook provides evidence of this in that it identifies another factor that we should consider. As alluded to earlier, our environmental baseline analyses are generally retrospective in

that they look at only the actions that have or are occurring presently, but they are also prospective in that we must also evaluate the impact—whether it be past, present, persistent or latent—of these actions. As argued below, it is nonsensical to include future effects from future actions (as required by factors 2 and 3 of the regulations) and then ignore the future effects from past, present, or continuing actions.

In some respects, the section 7 handbook confounds the confusion associated with temporal aspects of environmental baseline. The handbook defines environmental baseline as the “a snapshot of the species’ health at a specified point in time.” Some biologists narrowly interpret “a snapshot...at a specified point in time” to mean considering only past or present impacts at the time of consultation. Not only is this interpretation contrary to regulation, it also undermines the purpose of environmental baseline. The regulations specifically mandate that we consider future effects in certain situations (e.g., anticipated impacts associated with Federal actions already consulted on and contemporaneous State and private actions). Thus, to restrict our environmental baseline analyses to only impacts that have occurred up to the point of consultation would exclude impacts specifically identified within regulation.

Moreover, these interpretations run counter to the purposes of the environmental baseline. The effects of the action are “the direct and indirect effects....*when added to the environmental baseline.*” In other words, the environmental baseline serves as a control or a baseline from which the effects of the action are judged against. To determine the extent to which an action will affect a listed resource, this baseline must accurately depict the base conditions of the listed species/critical habitat. To establish a valid baseline, we must consider all impacts from past, present, and continuing action. Failure to consider all impacts could inflate the baseline and potentially result in underestimating the risks to the listed resources. Take the Hawaiian monk seal, for example, sea lion where past actions have disrupted the natural age structure of the population. These factors have skewed the age structure such that there are fewer juveniles than adults. As the adults mature and die, some will not be replaced. This will lead to fewer pups will be produced and then even fewer adults, and so on. To accurately assess the effects an action will have on the monk seal, we must consider these future (latent) effects from the past factors that have skewed the age structure. If we base our analyses only on the present base conditions, we would greatly underestimate the vulnerability of the species to further perturbations

Bottom line, we are in no way restricted to considering only those 4 factors identified in the regulations and the section 7 handbook. In fact, to fulfill their purposes, our environmental baseline analyses must accurately ascertain the vulnerability of the listed resources to future perturbations. And, to do this, we must consider all effects from past, present and continuing.

*Environmental baseline section is an **analysis** of factors*

Environmental baseline is an **analysis** of the factors that have, are, or will continue to affect the listed resources; not merely a recitation of the actions that have occurred or are occurring in the action area. We need to articulate how the other actions are specifically affecting the base conditions of the listed resources within the action area. Simply reciting a list of the actions that have or are occurring within the action area without explaining how these actions are impacting the listed resources is insufficient. The courts have affirmed this in *DOW v Babbitt* (2001) and *GP v NMFS* (2000).

## **2. Strategies for Meeting the Regulatory Requirements**

### *Establishing environmental baseline*

In constructing our environmental baselines, we assess the base conditions of the listed resources. The base conditions are described by identifying the factors that have, are or will continue to impact the listed resources, and analyzing how those factors have affected (i.e., the response of the listed resource to the factor) the species or critical habitat. The information available will vary by species and action area, but in general, data on the current population number and trend, habitat quality and quantity, spatial and temporal occurrence of the listed resources, critical habitat quality and quantity, and the relevance of the listed resources to the overall conservation of the species/value of critical habitat as designated should be presented. Without exception, environmental baseline analyses should speak to the expected stability and resiliency of the listed resources as these are key factors in determining the effects of proposed

actions. Once this information is compiled, the resulting base conditions are used to establish “baselines” for determining the effects of the proposed action.

Again, the effects of the action are “the direct and indirect effects....when added to the environmental baseline.” So, the first step in our effects analysis is to establish the environmental baseline from which we can judge the effects of the proposed action against. In other words, the environmental baseline functions as a control to measure the results of an “experiment” (i.e., proposed action). We use the environmental baseline to tease out the effects anticipated to result from the proposed action from those effects that are anticipated to occur regardless of whether the proposed action is authorized, funded, or carried out.

In establishing environmental baseline, it is helpful to use a 3-step approach in which we consider the current and future base conditions of the listed resources in action area.

Step 1 - describe the base conditions of the listed resources at the time of consultation (i.e., make a diagnosis). This serves as the “reference point” for the next 2 steps.

Step 2 - project (make a prognosis) from the reference point the anticipated future base conditions of the listed resources in light of the past, present, and future effects (i.e., persistent, latent, and effects from continuing actions) that will exist assuming the action is not authorized, funded, or carried out. This projection/prognosis serves as the control or the baseline for discerning the effects of the proposed action (this is our control or baseline prognosis).

Step 3 - project, again from your reference point, the anticipated future base conditions of the listed resources in light of all future effects considered in step 2, as well as, adding the stressors associated with the proposed action (this is the project prognosis).

The difference between these two projections/prognoses is the effects of the proposed action. Although perhaps unaware, most biologists are using this 3-step approach in their effect analyses. While they may not explicitly state the anticipated base conditions of the species with and without the proposed action, their conclusions necessarily imply this (e.g., If the proposed management *did not occur*, would expect deteriorating habitat conditions to continue. *With* the proposed action, anticipate improving habitat conditions and consequently improved base conditions). The base conditions resulting from steps 1 and 2 are described within the Environmental Baseline section of the biological opinion; the base conditions resulting from the analysis in step 3 are described in the Effects section.

#### *Incorporating Safe Harbors into the Environmental Baseline*

Safe Harbor is a FWS process that permits future take and associated habitat destruction in exchange for implementation of action that are anticipated to result in conservation benefits presently. The extent of conservation benefit, as well as the extent of adverse effect, varies from one safe harbor agreement to another. As such, our environmental baseline analyses must factor in the extent of benefit and harm as anticipated in each safe harbor agreement. This information must be tracked and include in every environmental baseline analysis. This is a daunting task, in some regions in particular, as we do not yet have a database that tracks all existing safe harbor agreements.

### **3. Strategies for Developing Environmental Baselines for Continuing Actions**

Typically, we evaluate actions that have not yet been implemented. At times, however, we consult on continuing actions (e.g., NOAA's fishery program; FERC's proposal to re-license a hydroelectric dam, which is already in place, operating, and impacting the environment). In these circumstances, the 3-step process is especially useful for establishing environmental baselines.

Step 1 - describe the existing conditions (i.e., diagnose current status of listed resource) which serve as the reference point for the next two steps. Note, we do not go back in time and use the base conditions that existed prior to when the proposed action was first authorized, funded, or carried out as our reference point.

Step 2 - project (i.e., control prognosis), using the reference point, the anticipated future base conditions that will exist assuming the continuing action will no longer be authorized, funded, or carried out (i.e., the continuing action is now a new action and its effects are captured in the project prognosis)<sup>1</sup>. When making this projection, we need to identify the stressors that are caused by the proposed action, and remove these stressors from our control in order for us to tease out the effects of the action. The control prognosis must include past, latent, and persistent effects from the past implementation of the proposed action.

Using a FERC example, step 2 entails making a projection/prognosis assuming that the dam will not be re-licensed and operation and maintenance will discontinue. That is, we need to identify the stressors associated with the operation and maintenance of the dam (e.g., fluctuating water temperatures, scouring events, etc.) and project the future base conditions assuming these stressors do not occur. Our prognosis must consider the impacts that occurred from the construction and operation of the dam up to the point consultation. Any latent or persistent effects from past operation and maintenance of the dam and persistent effects from the physical presence of the dam must be included.

Step 3 - project, from the reference point, the base conditions assuming the dam is re-licensed and continues to function. That is, add the anticipated impacts from the proposed action, as well as those future effects evaluated in step 2, to the reference point. The effect of the proposed action is the difference between the anticipated base conditions that will result if the proposed action is no longer authorized, funded, or carried out and those that are anticipated if the continued action is implemented.

In the FERC example, this means we would go back to the reference point and project future base conditions assuming the stressors (e.g., water temperature fluctuations, etc.) continue. The difference between the control and project prognoses is the effects of continued operation and maintenance of the dam.

Some argue that as the dam was constructed in the past, the impacts of continued operation and maintenance are also considered in the environmental baseline prognosis. It is correct that the effects of construction of the dam and the effects of past and present operation and maintenance are evaluated in the environmental baseline. Effects from future operation and maintenance are aspects of the proposed action, and as such, are evaluated in the project prognosis.

#### **4. Strategies for Building Administrative Records**

Our administrative records should at a minimum provide evidence of:

- The information we used to construct our environmental baseline – such as the ecological data for pertaining to the action area, the factors we analyzed, the biological information on the listed resources, and the information pertaining to the proposed action
- How we determined we used the best available information – identify the literature searches completed and summarize the findings; explain the criteria used to judge the relevancy, validity and power of the information; and identify the data and explain why such information was discarded

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<sup>1</sup> This projection is not equivalent to the NEPA “no action” alternative. A NEPA “no action” alternative typically means that the action will continue as it is currently being implemented. Under ESA, “no action” means that the proposed action, which in this case involves the continuing action, will not occur.

- The method and results of our environmental baseline analysis – articulate how the base conditions were established, explain how the ecology of the listed resource was characterized; and discuss how such information was used to establish the baseline.